**Project: humanoid synthETix**

**Team: sla**

Approach:

We are using yolo object detection algorithm which stands for “you only look once.”, it is a very efficient and relatively accurate. Thus we chose this approach.

We used jupyter notebook to train our custom yolov8-object detection algorithm on the provided dataset after annotating all the images.

We created a .yaml file and imported that into our jupyter notebook using google drive.

That .yaml file was further used to train yolov8, thus optimizing for the given objects by increasing the weights.

Our custom Yolov8 was further used to detect objects with a relatively high accuracy. We also outputted a text file having the first element in a line being the class number of the object detected. We then used conditional statements to increment the counter depending on the objects being harmful and harmless. That was our approach for overcoming the problem.

End of the time changes:

After creating our custom model, we found it was relatively inaccurate. To improve the accuracy, we increased the image size for training our model, even though it took a lot of time. Finally, we added the different classes into groups of harmful and harmless classes and added the code to count the number of harmful and harmless objects.

What have you learnt in the process of solving problem statement??

* Dataset preparation: We used Roboflow to pre-process and augment the dataset. This can involve resizing, cropping, rotating, and adding variations to the images to increase the model's robustness.
* Model training: Utilize TensorFlow to train the chosen model on your prepared dataset. This involves feeding the labeled images into the model and optimizing the model to minimize the recognition errors.
* Evaluation: Evaluate the trained model's performance using validation data or a separate test set. Measure accuracy, precision, recall, and F1 score to assess the model's ability to recognize multiple objects accurately.

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